CLAIMS

1. A printed wiring board comprising an odd number n of conductive layers which are built up via insulating layers respectively and are electrically connected to one another via interconnecting through holes;

wherein the first conductive layer is a component-connecting layer on which an electronic component is to be mounted and leads electric currents in and out of the electronic component; the n-th conductive layer is an external connecting layer for connecting external connecting terminals which lead electric currents in and out of the printed wiring board; the second to (n-1)-th conductive layers are current transmitting layers for transmitting internal currents of the printed wiring board; and the surface of the n-th conductive layer is covered with the n-th and outermost insulating layer with external connecting terminals being exposed.

Sub C1

2. The printed wiring board according to Claim 1, wherein the external connecting terminals are solder balls.

Sub A1

3. A method of manufacturing a printed wiring board having an odd number n of conductive layers which are built up via insulating layers respectively and are electrically connected to one another via interconnecting through holes, the method comprising the steps of:

interposing insulating layers between the second to n-th conductive layers respectively and also forming interconnecting through holes for electrically connecting the conductive layers to one another;

laminating a prepreg and a copper foil on a surface of

the second conductive layer, while laminating and press-bonding a prepreg on a surface of the n-th conductive layer to form a multilayer substrate having an odd number n of insulating layers and also locating the second to n-th conductive layers as internal layers of the multilayer substrate;

etching the copper foil to form a first conductive layer;

forming interconnecting through holes in the first insulting layer and forming connecting holes in the n-th insulating layer respectively;

forming a metal plating film for electrically connecting the first conductive layer with the second conductive layer on the walls of the interconnecting through holes of the first insulating layer; and

connecting external connecting terminals to the surface of the n-th conductive layer exposed through the interconnecting through holes of the n-th insulating layer.

Sub B1

4. A printed wiring board comprising an internal insulating substrate having a conductor circuit formed on a surface thereof, at least one internal insulating layer laminated on a surface of the internal insulating substrate, and an external insulating layer laminated on a surface of the internal insulating layer, the internal insulating layer and the external insulating layer having an internal conductor circuit and an external conductor circuit respectively;

wherein the internal insulating layer is of a glass cloth-reinforced prepreg; and the external insulating layer is of a resin.

5. The printed wiring board according to Claim 4, having two or more internal insulating layers.

6. The printed wiring board according to Claim 4 or 5, wherein the internal insulating layers have a coefficient of water absorption of 0.1 to 0.3 %.

Sub B2

7. A method of manufacturing a printed wiring board having a plurality of conductive layers which are built up via insulating layers respectively and are electrically connected to one another via interconnecting through holes; the method comprising the steps of:

forming conductive layers on a plurality of insulating layers respectively;

laminating and press-bonding the resulting insulating layers to form a multilayer substrate;

irradiating a laser beam on the multilayer substrate at interconnecting through hole-forming portions to define interconnecting through holes such that bottoms of the through holes reach the conductive layers; and

fusing solder balls against the interconnecting through holes and filling them with the solder.

8. The method of manufacturing a printed wiring board according to Claim 7, wherein the walls of the interconnecting through holes are covered with metal plating films.

9. The method of manufacturing a printed wiring board according to Claim 7 or 8, wherein the conductive layers have a thickness of 10 to 70 μm.

Sub B3

10. The method of manufacturing a printed wiring board according to any of Claims 7 to 9, wherein the insulating layers are flexible films made of a glass fiber-reinforced resin.

Sub A2

11. A printed wiring board comprising an interconnecting through hole penetrating an insulating substrate, a covering pad covering one opening of the interconnecting through hole, and a conductor circuit provided along a peripheral edge of the other opening which remains open;

wherein the covering pad and the conductor circuit are electrically connected to each other via a metal plating film covering a wall of the interconnecting through hole; and a solder ball for external connection is bonded onto the surface of the covering pad.

12. The printed wiring board according to Claim 11, wherein the solder ball is located in alignment with the central axis of the interconnecting through hole.

13. The printed wiring board according to Claim 11, wherein the solder ball is located at a position offset from the interconnecting through hole.

Sub B5

14. The printed wiring board according to any of Claims 11 to 13, wherein the surface of the insulating substrate is covered with a solder resist and the interconnecting through hole is filled with the solder resist.

Sub A3

15. ~~A printed wiring board comprising an~~

interconnecting through hole penetrating an insulating substrate, an annular pad disposed along a peripheral edge of one opening of the interconnecting through hole so as not to cover the opening, a covering pad covering the other opening of the interconnecting through hole and a conductor circuit connected to the covering pad;

wherein the annular pad and the covering pad are electrically connected to each other by a metal plating film covering a wall of the interconnecting through hole; and a solder ball for external connection is bonded onto the surface of the annular pad.

16. The printed wiring board according to Claim 15, wherein the solder ball is located in alignment with the central axis of the interconnecting through hole, and the interconnecting through hole is filled with a solder as the lower part of the solder ball.

17. The printed wiring board according to Claim 15, wherein the solder ball is located at a position offset from the interconnecting through hole.

18. The printed wiring board according to any of Claims 15 to 17, wherein the surface of the insulating substrate is covered with a solder resist.